

REMARKS

The applicant respectfully requests reconsideration in view of the following remarks.

Claims 1-17, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Frauenkron (US Patent 6,562,971) ("Frauenkron"). Claims 11-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 35-37, 41, 43, and 44 of copending Application No. 10/359,244. It is noted that copending Application No. 10/359,244 issued as U.S. Patent No. 7,115,742 ("742 patent"). Claims 11-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 9, 10, 13, and 14 of Frauenkron. Claims 14, 15, 16, and 17 are rejected over patented claims 9, 10, 13, and 14, respectively, since they recite the same limitations. The applicant respectfully traverses these rejections.

35 U.S.C. 102(b) Rejection

Claims 1-17, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Frauenkron. The present invention relates to a method of increasing the cutting hardness of a shaped body (see page 1, lines 1 to 5, and claim 1 of the present invention) wherein the shaped body comprises:

- a) a crystalline aluminosilicate and
- b) a binder selected from among oxides of silicon and/or zirconium.

For the preparation of the shaped body the following steps are involved:

- c) calcining at from 100 to 600⁰C and

d) after calcinating treating with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours (see claim 1).

It is true that Frauenkron (as already acknowledged in the specification on page 2, lines 14 and 21 by citing the EP 1,215,211 equivalent to US 6,562,971) discloses a method of forming a body which involves the following steps (see column 10, line 61; column 11, lines 64; to column 12, line 2; example for preparation of catalyst A column 14, line 65; to column 15, line 6 of ref. 1):

- a) mixing a zeolite powder with silica as binder
- b) extruding the mixture
- c) calcining the formed body at 500°C for 5 hours.

This shows clearly, that the important step d) the treatment with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0,1 to 10 bar for a period of at least 20 hours- after calcining the shaped bodies is missing. However, Frauenkron does not suggest nor teach step d) as is required by the applicant's claimed invention.

The Examiner asserts that Example 1 at col. 15, lines 10-22 disclose step d). The applicant respectfully disagrees. Frauenkron does not teach the treatment with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours **after calcining** the shaped bodies. Since this claimed feature is not disclosed by Frauenkron, Frauenkron does not anticipate the claimed invention. For the above reasons, this rejection should be withdrawn.

Non-Statutory Obviousness Type Double Patenting Rejections

Claims 11-17 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 35-37, 41, 43, and 44 of copending Application No. 10/359,244. Claims 11-17 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 9, 10, 13, and 14 of Frauenkron. Claims 14, 15, 16, and 17 are rejected over patented claims 9, 10, 13, and 14, respectively, since they recite the same limitations.

Obviousness-type double patenting as defined is when claims in a patent application are not patentably distinguishable from claims in a patent (MPEP 804). The test applied to determine obviousness-type double patenting exists is whether or not the claims in the application define merely an obvious variation of the invention disclosed and claimed in the patent (In re Vogel and Vogel, 164 USPQ 619 (CCPA 1970). If claims are unobvious over 35 U.S.C. §103, there can be no double patenting (In re White and Langer, 160 USPQ 417 (CCPA 1969)). Further, the overlapping of claims is not a significant or controlling factor in obviousness-type double patenting (In re Longi et al., 225 USPQ 645 (CAFC 1985)). The proper consideration of obviousness type doubling patenting is the improper extension of the patent right. The applicants believe that these applications are patentably distinct for the reasons stated below. This application contains the following main claims 1, 11, 19 and 22.

1. **A method of increasing the cutting hardness of a shaped body** comprising a crystalline aluminosilicate, wherein the shaped body comprises a binder selected from among oxides of silicon and/or zirconium and **is treated with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours and the shaped body has been calcined at from 100 to 600°C before the treatment with water vapor.**

11. A process for preparing triethylenediamine (TEDA) by reaction of ethylenediamine (EDA) and/or piperazine (PIP) in the presence of a crystalline aluminosilicate catalyst, **wherein a shaped body whose**

cutting hardness has been increased beforehand using a method according to claim 1 is used as catalyst.

19. A process for **chemical synthesis** carried out in the presence of a crystalline aluminosilicate catalyst, wherein **a shaped body whose cutting hardness has been increased beforehand using a method according to claim 1 is used as catalyst.**

22. (Previously presented) A **shaped body** prepared by the method as claimed in claim 1. (emphasis added)

In all the claims of the present application, the applicant requires a shaped body and shaped body is treated with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours and the shaped body has been calcined at from 100 to 600°C before the treatment with water vapor. The '742 patent has the following claims 1, 21 and 24.

1. **A process for the preparation of triethylenediamine (TEDA)** characterized by reaction of ethylenediamine (EDA) in the presence of a **zeolite catalyst**, wherein the reaction is carried out in the presence of from 14 to 300% by weight of water, based on EDA employed, and wherein the zeolite catalyst comprises a metal M in oxidation state III, selected from the group consisting of B, Fe, Co, Ni, V, Mo, Mn, As, Sb, Bi, La, Ga, In, Y, Sc and Cr, and mixtures thereof, or oxidation state IV, selected from the group consisting of Ti, Zr, Ge, Hf and Sn, and mixtures thereof, as oxides, and for M=metal in oxidation state III, has an $\text{SiO}_2/\text{M}_2\text{O}_3$ molar ratio of greater than 100:1 to 40,000:1, and for M=metal in oxidation state IV, has an SiO_2/MO_2 molar ratio of greater than 10:1 to 40,000:1, and the reaction temperature is from 250 to 500° C.

21. A process for the **preparation of a solution** of TEDA, which comprises **preparing TEDA as claimed in claim 1**, evaporating the prepared TEDA, and passing the vapor-form TEDA into a liquid solvent.

24. **A process for the preparation of triethylenediamine (TEDA)** by reaction of ethylenediamine (EDA) in the presence of a zeolite catalyst, wherein the reaction is carried out in the presence of from 14 to 300% by weight of water, based on EDA employed, and wherein the zeolite catalyst comprises a metal M in oxidation state III, selected from the group

consisting of B, Fe, Co, Ni, V, Mo, Mn, As, Sb, Bi, La, Ga, In, Y, Sc and Cr, and mixtures thereof, or oxidation state IV, selected from the group consisting of Ti, Zr, Ge, Hf and Sn, and mixtures thereof, as oxides, and for M=metal in oxidation state III, has an $\text{SiO}_2/\text{M}_2\text{O}_3$ molar ratio of greater than 100:1 to 40,000:1, and for M=metal in oxidation state IV, has an SiO_2/MO_2 molar ratio of greater than 10:1 to 40,000:1, the reaction temperature is from 250 to 500⁰ C., and wherein the reaction is carried out in the presence of ammonia.

The '742 patent does not claim a method of increasing the cutting hardness of a shaped catalyst body. In addition, the '742 patent does not claim "treating with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours and the shaped body has been calcined at from 100 to 600°C before the treatment with water vapor". This is not required in claims of the '742 patent.

Frauenkron independent claim 1 states:

1. A process for **the preparation of triethylenediamine (TEDA)**, which comprises reacting ethylenediamine (EDA) and one or more amine compounds selected from the group consisting of monoethanolamine, diethanolamine, triethanolamine, piperazine (PIP), diethylenetriamine, triethylenetetramine, tri(2-aminoethyl)amine, N-(2-aminoethyl)ethanolamine, N-(2-hydroxyethyl)piperazine and N-(2-aminoethyl)piperazine, in the presence of a zeoline catalyst, wherein the zeolite catalyst comprises one or more metals M in oxidation state III or IV as oxides, and for M=Al, has an $\text{SiO}_2/\text{M}_2\text{O}_3$ molar ratio of greater than 1400:1 to 40,000:1, for M=metal in oxidation state III or M=two or more metals in oxidation state III, has an $\text{SiO}_2/\text{M}_2\text{O}_3$ molar ratio of from greater than 100:1 to 40,000:1, and for M=metal in oxidation state IV or M=two or more metals in oxidation state IV, has an $\text{SiO}_2/\text{M}_2\text{O}_3$ molar ratio of from greater than 100:1 to 40,000:1, and the reaction temperature is from 250 to 500⁰C.

Frauenkron does not claim a method of increasing the cutting hardness of a shaped catalyst body. In addition, the Frauenkron does not claim "treating with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of

at least 20 hours and the shaped body has been calcined at from 100 to 600°C before the treatment with water vapor”. This is not required in claims of Frauenkron.

Claims 14, 15, 16, and 17 are rejected over patented claims 9, 10, 13, and 14 because these claims allegedly cite the same limitations. This is not true because all the applicant’s claims including claims 14, 15, 16 and 17 require the method as claimed in claim 1 which requires “treating with a gas consisting of water vapor at from 100 to 600°C and an absolute pressure of from 0.1 to 10 bar for a period of at least 20 hours and the shaped body has been calcined at from 100 to 600°C before the treatment with water vapor”. This is not specifically claimed in Frauenkron. For the above reasons, this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 12810-00175-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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